## REMARKS

This amendment is filed in response to the Office Action mailed on April 21, 2005. All objections and rejections are respectfully traversed.

Claims 1-34 are in the case.

Claim 34 was amended to better claim the invention.

No claims were added.

At Paragraph 1 of the Office Action, the Abstract was approved.

At Paragraph 2 of the Office Action the form of Claim 9 was approved.

At Paragraph 3 claim 34 was objected to. Amendment of Claim 34 is believed to satisfy this objection.

At Paragraph 4 of the Office Action, the Examiner urges that a removable non-volatile memory device is known in the art as a ROM memory device. This issue is discussed further herein-below with regard to the 35 U.S.C. 102 rejections.

At Paragraph 5 of the Office Action claim 34 was rejected under 35 U. S.C. 112, second paragraph. Amendment of Claim 34 is believed to satisfy this rejection.

At Paragraph 6 of the Office Action, Claims 1, 5, 7, 9-12, 16, 19, 24-27, and 30-31 were rejected under 35 U.S.C. 102(e) as being anticipated by Orr U. S. Patent No. 6,189,114 issued February 13, 2001.

The present invention, as set forth in representative Claim 1, comprises, in part:

> 1. (Original) A file server system for a computer having a processor, a memory coupled to the processor, and a system bus to which the processor and memory are coupled, the computer being configured to implement a file system, the file server system comprising:
>
> (A) a storage operating system adapted to be executed by the processor;
>
> (B) ***a removable nonvolatile memory device coupled to the system bus, the removable nonvolatile memory device containing diagnostics code for the system; and***
>
> ***(C) a set of boot instructions resident in the filer server system including instructions for executing a normal boot routine upon a power-on of the system, and including instructions enabling the processor to identify the removable nonvolatile memory device and to load the diagnostics code into the memory in response to a command to execute a diagnostics boot routine instead of the normal boot routine.***

Orr discloses a computer system which has diagnostic code stored in a non-volatile memory permanently mounted in his computer. Orr can set a flag using a remote computer, so that when the computer system boots it checks the flag, and if the flag is set, the diagnostic code is run from Orr's permanently mounted non-volatile memory.

Further, Orr discloses a server system 40 controlled by a controlling system 10 (Orr Col. 4 lines 38-65). The server system 40 has a system flash ROM containing the BIOS, and also containing a diagnostic code 64, which when invoked, performs diagnostic testing of the server system 40 (Orr Col. 5 lines 14-31).

Applicant respectfully urges that Orr has no disclosure of Applicant's claimed novel ***(B) a removable nonvolatile memory device coupled to the system bus, the removable nonvolatile memory device containing diagnostics code for the system; and***

***(C) a set of boot instructions resident in the filer server system including instructions for executing a normal boot routine upon a power-on of the system, and including instructions enabling the processor to identify the removable nonvolatile memory device and to load the diagnostics code into the memory in response to a command to execute a diagnostics boot routine instead of the normal boot routine.***

In particular, Orr has no disclosure of Applicant's claimed ***a removable nonvolatile memory device coupled to the system bus, the removable nonvolatile memory device containing diagnostics code for the system***. Accordingly, Applicant respectfully urges that Orr cannot anticipate Applicant'' claimed novel invention under 35 U.S.C. 102(e).

Orr discloses a non-volatile memory holding both boot instructions and diagnostic instructions, and therefore the disclosure of Orr is part of the problem solved by the presently claimed invention.

As set out in the Background portion of the present Specification at page 5 line 3 through - page 6 line 3, the Specification states:

> As an alternative, the diagnostics routine has been placed directly on the on-motherboard EPROM (or onboard flash) that contains the firmware boot mechanism. However, there are several drawbacks to this approach. First, a conventional on-motherboard firmware EPROM may be limited in storage size. In one example, a typical Original Equipment Manufacturer (OEM)-supplied onboard flash for storage of firmware is only about 0.5 Mbytes in size. This limits the amount of information with respect to diagnostics that can be stored.
>
> In addition, the placement of a diagnostics routine on the firmware that also contains the boot mechanism can present risks. It is often desirable to update diagnostic routines. However, commingling the diagnostics routine and boot mechanism on the same reprogrammable medium may increase risk of corruption of the boot mechanism during an attempt to update the diagnostics. More specifically, the EPROM provided from the manufacturer of the motherboard often includes memory that is already segmented, and if one were to attempt to add code or to rewrite code, then a whole sector of the memory may have to be erased which could compromise other aspects of the programming. While a partitioning of the firmware EPROM could alleviate some risks associated with commingling the boot mechanism with the diagnostics, the size and configuration of a conventional on-motherboard EPROM make this impracticable.
>
> Moreover, during diagnostic sessions, the results produced in the tests being run (e.g., a diagnostics log) may be available to the operator in real-time, but they are often not saved. As such, valuable "error code" information that may have been displayed is often lost. It would be advantageous to maintain a record of diagnostics log data, configuration information, component operating characteristics, and the like, during and after diagnostic procedures. Again, the size of the EPROM dictates that such a log typically (if at all kept) resides in disk storage. Thus, the accessibility

> of the log could be compromised in the event of a disk failure or other circumstance.
>
> Finally, the presence of diagnostics in conjunction with the firmware of the boot mechanism means that upgrades or changes to the underlying diagnostics must occur generally at boot-up. There is, again, significant risk in attempting to write to the media that stores the boot mechanism during runtime. The need to rely on a reboot to effect change to the diagnostic code thereby (or read a diagnostic log) causes further delays in the start of normal file service and interrupts its continuity.
> (Specification at page 5 line 3 through - page 6 line 3)

As mentioned above, Orr discloses a server system 40 controlled by a controlling system 10 (Orr Col. 4 lines 38-65). The server system 40 has a system flash ROM containing the BIOS and also containing a diagnostic code 64, which when invoked, performs diagnostic testing of the server system 40 (Orr Col. 5 lines 14-31).

Since Orr has both his BIOS and his diagnostic code stored in the same flash ROM, his disclosure fits squarely within the problem solved by the present invention.

Further, an advantage of the present invention is that Applicant's claimed ***removable nonvolatile memory device coupled to the system bus*** is explained in Applicant's Specification in his Summary of the Invention section at page 6 line 13 through page 7 line 23, which states:

> The disadvantages of the prior art are overcome by providing a diagnostics system in which the diagnostics code is stored in a removable nonvolatile memory device, such as a compact flash or a PC card. The

removable nonvolatile memory device is a relatively large-capacity, separate memory component that interfaces with, but is not an integral part of the motherboard and is physically connected to the motherboard via an interface device. The removable nonvolatile memory device appears to the processor as a generalized discrete storage device. A port for this type of connection can be built into a motherboard, and as such, the removable nonvolatile memory device can be readily coupled to a third party-manufactured motherboard.

When the diagnostics code is to be rewritten, upgraded or patched, this can be easily accomplished via an I/O operation performed directly with the removable nonvolatile memory device. Thus, there is no need to write, undesirably, to the boot mechanism firmware. In addition, upgrades can be performed without taking the file server out of service. In other words, the diagnostics code that resides on the removable nonvolatile memory device can be readily changed, upgraded or patched by directly transmitting via the I/O interface (for example, a southbridge device) of the removable nonvolatile memory device. These upgrades can be performed while the underlying filer is in operation, thus without undesired file service downtime.

In accordance with one aspect of the invention, the boot mechanism firmware includes a command line interface programmed so that the firmware's normal boot mechanism may be interrupted by a user-initiated command (or a computer-initiated command) to run a diagnostics boot, instead of a normal boot. When this command is received, the firmware is programmed to probe the removable nonvolatile memory device, and to load the diagnostics image contained thereon into main memory, and to execute the diagnostics routine instead of the normal boot routine.

Internally, the removable nonvolatile memory device is divided into several memory partitions, each of which appears to the filer as a separate "drive." In an illustrative embodiment, the diagnostics code is written into one of the partitions. Another partition is designated to contain a maintenance log of diagnostic test results. The removable nonvolatile memory device is readily partitionable, unlike typical on-board EPROM.

In accordance with a further aspect of the invention, the data produced as a result of the diagnostics test sequence is captured, stored and continuously updated in the maintenance log located in one partition of the removable nonvolatile memory device. Such diagnostics log data can be readily retrieved (during filer runtime, for example) for interpretation at a later time. Advantageously, the removable nonvolatile memory devices retain their state during power-off or physical removal from the filer,

thereby inherently providing disaster recovery protection and transportability to a properly functioning filer.
(Specification page 6 line 13 through page 7 line 23)

Accordingly, Applicant respectfully urges that the claimed invention is not disclosed by Orr, and further that the claimed invention has advantages which the disclosure of Orr cannot support.

Accordingly, Applicant respectfully urges that Orr is legally precluded from anticipating Applicant's claimed novel invention under 35 U.S.C. 102(e) because of the absence from Orr of any disclosure of Applicant's claimed novel

***(B) a removable nonvolatile memory device coupled to the system bus, the removable nonvolatile memory device containing diagnostics code for the system; and***

***(C) a set of boot instructions resident in the filer server system including instructions for executing a normal boot routine upon a power-on of the system, and including instructions enabling the processor to identify the removable nonvolatile memory device and to load the diagnostics code into the memory in response to a command to execute a diagnostics boot routine instead of the normal boot routine.***

At Paragraph 7 of the Office Action Claims 2-4, 8, 13-15, 17-18, 20-23, 28-29, and 32-33 were rejected under 35 U.S.C. 103 (a) as being unpatentable over Orr in view of Aguilar et al. U. S. Patent no 6,785,807 issued August 31, 2004 (hereinafter Aguilar).

Applicant respectfully notes that Claims 2-4, 8, 13-15, 17-18, 20-23, 28-29, and 32-33 are all dependent claims, and that they are dependent from independent claims which are believed to be in condition for allowance.

Accordingly Claims 2-4, 8, 13-15, 17-18, 20-23, 28-29, and 32-33 are believed to be in condition for allowance.

At Paragraph 8 of the Office Action Claim 6 was rejected under 35 U.S.C. 103 (a) as being unpatentable over Orr in view of Hitz et al U. S. Patent No. 5,963,962 issued October 5, 1999 (hereinafter Hitz).

As set forth in representative claim 6, the present invention comprises, in part:

> 6. A file server system for a computer having a processor, a memory coupled to the processor, and a system bus to which the processor and memory are coupled, the computer being configured to implement a file system, the file server system comprising:
>
> (A) a storage operating system adapted to be executed by the processor;

> ***(B) a removable nonvolatile memory device coupled to the system bus, the removable nonvolatile memory device containing diagnostics code for the system;***
>
> ***(C) a set of boot instructions resident in the filer server system including instructions for executing a normal boot routine upon a power-on of the system, and including instructions enabling the processor to identify the removable nonvolatile memory device and to load the diagnostics code into the memory in response to a command to execute a diagnostics boot routine instead of the normal boot routine;***
>
> (D) a storage adapter coupled to the system bus;
>
> at least one storage disk coupled to the storage adapter and containing files served by the operating system; and
>
> (E) a plurality of storage disks coupled to the storage adapter and data on the disks being stored in a write anywhere file layout system.

Hitz discloses a file system, and describes a method of using inodes and snapshots to assist in maintaining consistency points.

Applicant respectfully urges that neither Orr nor Hitz disclose Applicant's claimed novel ***(B) a removable nonvolatile memory device coupled to the system bus, the removable nonvolatile memory device containing diagnostics code for the system;***

***(C) a set of boot instructions resident in the filer server system including instructions for executing a normal boot routine upon a power-on of the system, and including instructions enabling the processor to identify the removable nonvolatile memory device and to load the diagnostics code into the memory in response to a command to execute a diagnostics boot routine instead of the normal boot routine.***

Accordingly, Applicant respectfully urges that Orr and Hitz, taken either singly or in combination, are legally precluded from rendering obvious under 35 U.S.C. 103(a) Applicant's claimed novel invention because of the absence from both Orr and Hitz of any disclosure of Applicant's claimed novel

***(B) a removable nonvolatile memory device coupled to the system bus, the removable nonvolatile memory device containing diagnostics code for the system;***

***(C) a set of boot instructions resident in the filer server system including instructions for executing a normal boot routine upon a power-on of the system, and including instructions enabling the processor to identify the removable nonvolatile memory device and to load the diagnostics code into the memory in response to a command to execute a diagnostics boot routine instead of the normal boot routine.***

All independent claims are believed to be in condition for allowance.

All dependent claims are believed to be dependent from allowable independent claims, and therefore in condition for allowance.

Favorable action is respectfully solicited.

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Please charge any additional fee occasioned by this paper to our Deposit Account No. 03-1237.

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